12 November 1963

MEMORANDUM FOR: Chairman, Technical Development Committee

THROUGH : Executive Secretary, TDC

SUBJECT : Staff Study - Additional Funds to Complete the Bausch and Lomb Variable Magnification Tracing Projector

1. PROBLEM:

To provide additional funds for completing a prototype of the Variable Magnification Tracing Projector.

2. ASSUMPTION:

That such an instrument is needed at NPIC and that no satisfactory instrument is currently available in the commercial market.

3. DISCUSSION:

A Variable Magnification Tracing Projector is being developed by Bausch and Lomb. It will provide a ready means of projecting contact size film positives at various magnifications ranging from 2X to 16 X for the purpose of preparing line drawings for PI reports. The image will be rear projected onto the tracing material which is placed over a horizontal glass work surface. An Omega Model D-2 Enlarger was modified to serve as the lighthouse and film gate assembly. This simple set up has proved to be unsatisfactory since it lacks stability and sufficient illumination.

Instability of the basic enlarger portion of the instrument causes the imagery to move about on the tracing surface as vibrations are transmitted through the instrument. In order to correct this, Bausch & Lomb proposes to use a new enlarger framework specifically designed to provide the required stability. Also, special casters that lock in rotation as well as transverse movement will replace those presently used.

Insufficient illumination, which has also been a problem on other projection type equipment, such as the Richardson Viewer, is the most serious of the deficiencies. The present illumination is furnished by an original D-2 Enlarger condenser system and a 150 watt PAR-38 Spot Lamp which is inadequate. This was compared with the illumination being used for an instrument with a similar rear projection system, a Sloping Screen Viewer that Bausch & Lomb is developing for the Navy. Calculated and real values were used in order to evaluate the anticipated illumination level of a similar system proposed for the Variable Magnification Tracing Projector. On the basis of the tests conducted by Bausch & Lomb the proposed design should increase the illumination level by an approximate factor of four which will be more than adequate. The lamp used in the viewer and proposed for the Tracing

Projector is a 500 watt, horizontal burning projection lamp. Since this lamp will emit a large amount of heat, a forced air cooling system will be required to prevent damage to the film.

Bausch & Lomb has expended approximately [redacted] more than has been allocated to this contract, and to complete the instrument with the changes described will require an additional [redacted] At first glance, this figure appears to be rather high since the present authorized amount is [redacted] However, it must be realized that the proposed changes to the instrument are actually major modifications.

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4. CONCLUSIONS:

It is believed that these modifications will correct the present deficiencies and that the additional cost is justified.

5. RECOMMENDATIONS:

It is recommended that additional funding in the amount of [redacted] be authorized to cover the cost of changes on this contract. This will increase the total contract cost to [redacted]

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Development Branch, P&DS